AMENDMENTS TO THE SPECIFICATION

Kindly amend the following paragraphs as follows.

[0004] Recently, airborne (e.g., from an aircraft) synthetic aperture radar (SAR) has also been used in mine detection. SARs typically are side-looking radar which produce a two-dimensional image of the earth's surface. In the past, SAR's operated with bandwidth up to 500 mHz or 1 GHz resulting in an image resolution of 6 inches.

[0007] An additional disadvantage with current SAR systems is that these systems produce an image of limited resolution. Since SARs operate at bandwidths up to 1 GHz ~~16 Hz~~, SAR range resolution is limited to about six inches, as indicated above. Consequently, the six-inch imaging resolution reduces the applicability of SARs in buried mine imaging, detection and classification because mines tend to be 3 inches to a foot in diameter.

[0028] Radar system 10 allows for the mapping of a subsurface minefield by detecting a three-dimensional section of the minefield layout. Such three-dimensional resolution imaging provides advantages not possible with conventional two-dimensional surface SAR, including the ability to obtain depth information and to provide classification of mines according to shape. In addition, radar system 10 provides radar cross-section (RCS) detection and identification of the interior metal components of plastic mines. Further, the radar system 10 enables the rejection of ground surface reflections, ~~a.e.~~ through polarization diversity ~~can be used for image enhancement and the rejection of ground surface reflections~~.

[0029] An example of a preferred implementation of radar system 10 will now be considered. It will be understood ~~to~~ that this example is provided to enhance understanding of the present Invention and not to limit the scope or adaptability thereof.

[0030] The necessary calculation to determine power requirements for a three-dimensional SAR in a ground penetrating mode of the present invention is provided by the formula:

$$P_T = \frac{SNR(4\pi)^3 h^4 kTLN_F L_{ref} A}{\tau G_T G_R \sigma \lambda^2} \quad where$$

SNR	=	signal to noise ratio per pulse (frequency) from receive array = 10 dB
h	=	height = 80 ft
k	=	Boltzmann Constant = 1.38×10^{-23}
T	=	antenna noise temperature = 400K
L	=	system losses = 10 dB
N_f	=	receive noise figure = 7 dB
L_{ref}	=	reflection <u>loss</u> at earth's surface = 10 dB
A	=	earth attenuation = 10 dB
τ	=	pulse width = .5 μs
G_T	=	transmit gain = 15.8 dB
G_R	=	receive gain = 32.2 dB
σ	=	Radar cross section = 0.01 m^2
λ	=	0.1 m (Frequency = 3 GHz)
P_{peak}	=	61.0 mW
P_{av}	=	9.5 mW for duty factor 0.155

[0031] In this example, the radar transmitter 12 operates at a S-band. Ground attenuation and reflection <u>loss</u> from surface 16 are factored when considering the necessary power requirement. The typical peak and average transmit power requirements are in the milliwatt range.